Los Alamos leads key thrust in $115M Quantum Science Center collaboration

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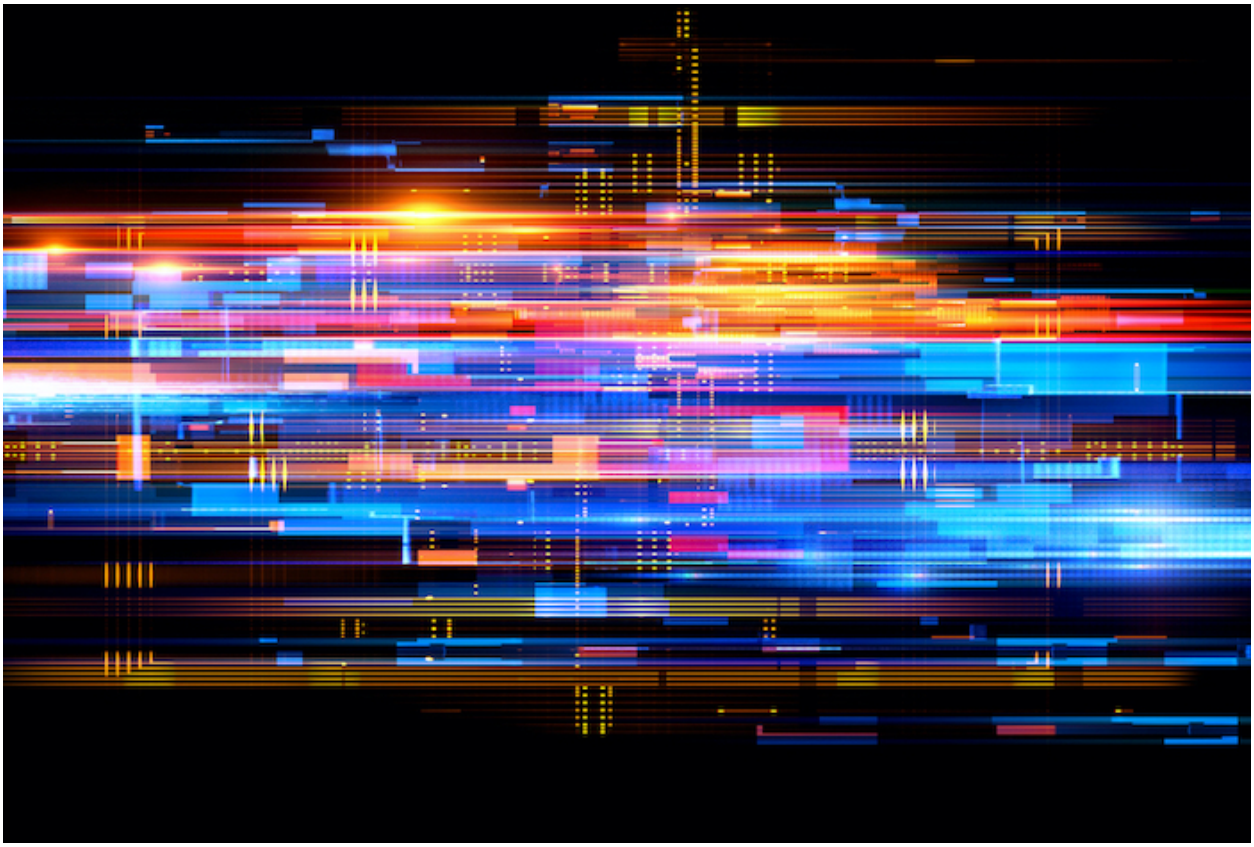

DOE Office of Science center to usher in a new era of quantum tech and innovation

The Laboratory will lead one of three major research thrusts in a collaboration charged by the Department of Energy with developing quantum technologies as part of the $115M Quantum Science Center (QSC). The QSC will be headquartered at Oak Ridge National Laboratory in Tennessee.

The QSC's research goals are organized around three scientific thrusts — quantum materials discovery and design, quantum devices and sensors for discovery science, and quantum simulations and algorithms. Los Alamos scientist **Andrew Sornborger** of the Computer, Computational, and Statistical Sciences division will lead the simulations and algorithms thrust.

"Los Alamos is integrally involved in the QSC. In addition to taking the lead in quantum simulations and algorithms, we will be performing research contributing to all research thrusts," said Sornborger. "This includes work in topological materials and quantum devices, applications of quantum simulation to high-energy and nuclear physics research, fundamental algorithm development, quantum algorithms for sensing, and implementation of quantum algorithms on near-term quantum computers. Getting this center funded is a testament to the Lab's theoretical and experimental strengths in quantum physics."

From computers exponentially more powerful than today's leading supercomputers to sensors with unprecedented precision, quantum technologies promise to greatly increase understanding of the world and, by extension, fundamentally transform it.

The center supports the National Quantum Initiative Act of 2018 by enhancing America's national security and retaining its global leadership in scientific research and development — goals that require broad expertise and capabilities. Quantum materials exhibit exotic properties under specific conditions, and the center will transition this knowledge to the private sector for use in practical applications such as computers and sensors.

"The Lab has long been at the forefront of quantum research," said **Toni Taylor**, associate Laboratory director for Physical Sciences at Los Alamos. "As part of the QSC, we will leverage our connections with many of the top institutions in the field to develop science and technology that will transform the world through quantum science. The potential for new technologies is vast, and almost unpredictable, but will undoubtedly lead to new sensors, computers and materials that will enhance our security, medicine, and daily lives."

Development of the next generation of scientists and engineers is integral to the QSC's mission. By engaging students and post-doctoral associates in research activities at partnering institutions, the QSC will offer a rich environment for cultivating the expertise necessary to ensure America leads the quantum revolution.

Along with Los Alamos, partner organizations include Oak Ridge National Laboratory (QSC Headquarters), Purdue University, Microsoft, Fermilab, Pacific Northwest National Laboratory, University of California-Berkeley, University of Maryland, Harvard University, University of Washington, UC-Santa Barbara, IBM, Caltech, ColdQuanta, the University of Tennessee-Knoxville, and Princeton University.

The QSC is one of five multidisciplinary National Quantum Information Science Research Centers supported by the DOE's Office of Science.